

[illegible]

	All kappa genes:	/	Jk1 gene	/	NciI /	PCR primer site	/
Asp	Pro		ThrTrpPhreGlycInnGlyThyLeuValGlulLeuLys	(SEQ ID NO: 2327)			
NNN	CCT		TGGAGTTCGCAGGACCGAAGGTGGGAATCMAAGCCGCCGCACTGTGAGTCCAAAGAATTTCG	(SEQ ID NO: 2328)			
GNNNN	-G		GAACCTCAAGACCGGGTTCCCTGGTGTTCCACCCTTGTAGTTTCGCGCGCGTCACACTCAGTGTTCCTTAAGC	(SEQ ID NO: 2329)			
	(except VK L20)						

/ JK2 gene /
 TyrThrPheCysGlnGlyThrLysLeuGluLeuLys (SEQ ID NO: 2330)
 TACATTTTGGCCGACGGGACCAAGCTGGAGATCAA (SEQ ID NO: 2331) continued as for JK1
 GAATGTGAACACCGGTGGTCCCTGCTCTAGTTT (SEQ ID NO: 2332)

JK3 gene / PhcThrPheGlyProGlyThrHisValAspIleLeys / (SEQ ID NO: 2333)
TTCACTTTCGCGCCCTCGCGCAAGTGGATTCAA / (SEQ ID NO: 2334) continued as for JK1
GAAAGTGAACCCGCGGACCCCTGGTTTACCTATAGTTT / (SEQ ID NO: 2335)

/	JK4 gene	/
LeurThrPheLysGlyGlyThzLysValGluIleLys	(SEQ ID NO: 2336)	
CTCATTTTGGCGGAGGCACCAAGTGGACATCAA	(SEQ ID NO: 2337) continued as for JK1	
GAGGTGAAGGCCCTCCCTGGTTCACCTCTAGTT	(SEQ ID NO: 2338)	

Lambda 3 genes:		DPL6 (-v3sl)+	/	+v3l8	Ser	His	/	JL2/3	for DPL6+v3sl+v3l8	/	NotI	/	PCR primer site	/
								VaivaPheGlyGlyGlyThrLeuSleuThrValLeu	(SEQ ID NO: 2339)					
					NNN-----CAT			TGTGTAATTGGCGAGGACCAAGCTGCATCCTAGGCGCCGATGAGTGCCTGAAGAATTTCG						(SEQ ID NO: 2340)
					GNNN-----G			TACAATAAAGGCCGCTCCCTGGTTGCATGTGCGAGATTCGCGCGCTCACACTCTTTAAACG						(SEQ ID NO: 2341)

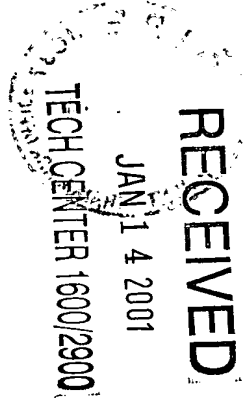
Lambda 3 gene: /DPL23 (=VL3.11)/
 Ser Ala
 GTG--- continued as for J12/3
 GTCAC---
 NNN-----GCA
 GNNN-----C

Lambda 1 genes: / DPL2+DPL3 / Gly
Gln-----GGT
NNN-----GTG--- continued as for JL2/3
GGNN-----C CACAC---

Lambda 2 gene: / DFL11 /
 Gln Leu
 NNN-----CTC
 GCNNN-----G
 AGCAC---

continued as for JL2/3

FIGURE 33



ASSEMBLY OF SINGLE-CHAIN ANTIBODY GENES FOR SEMISYNTHETIC LIBRARY V. 2.1

EcoRI / SfiI / VH gene / CDR H3 / JH4b gene / G4s linker /
 CGGGAATTGGCCCGGCGCCGNNNNNGA (SEQ ID NO: 2322) 6x-12x TrpGlyGluGlyThrLeuValThrValSerSerGlyGlyGlySerGlyGlyGlySer (SEQ ID NO: 2325)
 GGCCTTAAGCGCGGTGCGCCGNNNNNNCTNNV---NNVACCGCGCTTGGACCACTGGCAGAGAGTCCACCTCCGCAAGTCCGCTCCACCGAGACCGCCGCGCTA (SEQ ID NO: 2326)
 3' end for 40 VH genes
 CGGGAATTGGCCCGGCGCCGNNNNNA (SEQ ID NO: 2323) NNN---NNK continued as for J4b gene and linker
 GGCCTTAAGCGCGGTGCGCCGNNNNNTNNM---NNM continued as for J4b gene and linker
 3' end for 7 VH genes: DP31, DP33, DP39, DP40, f1p1, DP47 and DP49
 CGGGAATTGGCCCGGCGCCGNNNNNCA (SEQ ID NO: 2324) NNN---NNK continued as for J4b gene and linker
 GGCCTTAAGCGCGGTGCGCCGNNNNNNTNNM---NNM continued as for J4b gene and linker
 3' end for 4 VH genes: DP2, DP3, DP5 and DP38

 All kappa genes:
 Asp Pro /
 NNN-----CCT /
 GNNN-----G /
 (except VK L20)

 JK1 gene / NotI / PCR primer site /
 TrpThrPheGlyGlnGlyThrLysValGluLeuIleIys (SEQ ID NO: 2327)
 TGCAGGTCGCGCAGAGGACCAAGTGGATCAAA (SEQ ID NO: 2328)
 GAACTGCAAGCGGTCCCTCGTTCACCTTTAGTTTCGCGGTCACTCAGGTTTTTCTAAGC (SEQ ID NO: 2329)

 JK2 gene /
 TyrThrPheGlyGlnGlyThrLysLeuGluLeuIleIys (SEQ ID NO: 2330)
 TACACTTTTGGCAGGAGCAAGCTGGATCAAA (SEQ ID NO: 2331) continued as for JK1
 GAATGTGAAGAACCGGTCCCTCGTTCGACCTAGTTT (SEQ ID NO: 2332)

 JK3 gene /
 PheThrPheGlyProGlyThrLysValAspIleIys (SEQ ID NO: 2333)
 TTCACTTTTGGCCTCGGACCAAGTGGATCAAA (SEQ ID NO: 2334) continued as for JK1
 GAAAGTGAAGACCGCGGACCCCTCGTTCACCTATAGTTT (SEQ ID NO: 2335)

 JK4 gene /
 LeuThrPheGlyGlyGlyThrLysValGluLeuIleIys (SEQ ID NO: 2336)
 CTCACCTTTGCGCGAGGACCAAGTGGATCAAA (SEQ ID NO: 2337) continued as for JK1
 GAGAGTGAAGACCGCGCTCCCTCGTTCACCTAGTTT (SEQ ID NO: 2338)

 DPL16 (=v3s1)+ /
 Ser His /
 NNN-----CAT /
 GNNN-----G /

 Lambda 3 genes:
 Ser His /
 NNN-----CAT /
 GNNN-----G /

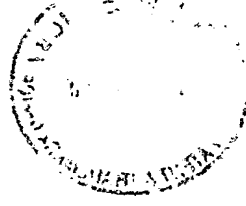
 Lambda 3 gene:
 Ser His /
 NNN-----CAT /
 GNNN-----G /

 Lambda 1 genes:
 Ser His /
 NNN-----CAT /
 GNNN-----G /

 Lambda 2 gene:
 Ser His /
 NNN-----CAT /
 GNNN-----G /

BOLD = IN DCI COLLECTION

FIGURE 33



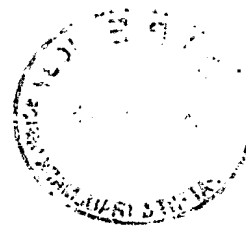
IGF-5 (SEQ ID NOS 2193 (DNA) and 2194-2199 (protein), respectively, in order of appearance)
 GACTACAAG ACTCGTGGT GAATTCCTG TATGTCCTG GCGTGGCTTA GGTTCAGAT TCTTCGTGG CGGTTCCCTA AGGATTGTTG TCAGATGAA GATATTTTTT ATTCTTTGTT GGCTAGTTTG GCGGCCGCA 139
 D Y K D S W L N F R Y V A G R A Q V S D S S V A V S . G L C S D E R Y F L F V V G Q F G G R
 T T K T R G . I F G H L L G V L R F Q I L L W P F P K D C V Q M K D I F Y S L L A S L A A A
 L Q R L V V E F S V C C W A C L G F R F F C G R F L R I V F R . K I F F I R C W L V W R P

IGF-8 (SEQ ID NOS 2200 (DNA) and 2201-2205 protein, respectively, in order of appearance)
 GACTACAAG ACCGGTTGC GGCTGCTGT GCTCTTGG GGTATGAGC CTTTATGCG GTTTCCTG ATGCTGATTG GTCTGGGTC TCGGCCGCA 100
 D Y K D A V A A A V A P W G . . A F L W A S P Y A D W S W V C G R
 T T K T R L R L L L L L G G D E P F Y G L L R H L I G R G S A A A
 L Q R R G C G C C C S L G V M S L F H G F S V C . L V V G L R P

IGF-G5 (SEQ ID NOS 2206 (DNA) and 2207-2210 (protein), respectively, in order of appearance)
 GACTACAAG ACTCGTGGT TTGCTGGGT GTGATGATTA GCTTTTCTG TTAGGGGT CGGTGGGCT TTTACTCAG CGTTGGCTGC CTGTTGTTGT GCCATAGT GTTCTTTGTT GTGTGGTGG GCGGCCGCA 139
 D Y K D W L V C L G V M I S F F C L G G R C G F L L S V G C L V V C P Q C F F G V W C G G R
 T T K T G W F A W V . . L A F S V Q G V G V A F Y S A L A A L L C A H S A S L V C G A A A A
 L Q R L V G L L G C D D Q L F L F R G S V W L F T Q R W L P C C V P I V L L W C V V R R P

IGF-7 (SEQ ID NOS 2211 (DNA) and 2212-2217 (protein), respectively, in order of appearance)
 GACTACAAG ACCGGATTG GGTGTTGATG CTGATTAGT TGGGTGGA GGGATGATG ATTGGCTGAT GGGTTTATG CGTTTGTAT GCGCTGGCT GCGGCCGCG CA 112
 D Y K D P D W V L Q L I S L G L E G M Q I G . W V L C V F D G A G W G G R
 T T K T R I G C C S . L V W G W R G C R L A D G F Y A F L M A L A G A A A
 L Q R P G L G V V A D Q F G V G G D V D W L M G F M R F . W R W L G R P

FIGURE 19



IGF-5 (SEQ ID NOS 2193 (DNA) and 2194-2199 (protein), respectively, in order of appearance)
 GACTACAAG ACTCGTGGT GAATTTCGG TATGTGCTG GCGTGCCTTA GTTTCAGAT TCCTCTGGG CCGTTCCCA AGGATTGTG TCAGATGAA GATATTTT ATTCTTGT GTCTAGTTG GCGGCCGA 139
 D Y K D S W L N F R Y V A G R A Q V S D S S V A V S . G L C S D E R Y F L F V V G Q F G G R
 T T K T R G . I F G H L L G V L R F Q I L L W P F P K D C V Q M K D I F Y S L L A S L A A A
 L Q R L V V E F S V C C W A C L G F R F F C G R F L R I V F R . K I F F I R C W L V W R P

IGF-8 (SEQ ID NOS 2200 (DNA) and 2201-2205 (protein), respectively, in order of appearance)
 GACTACAAG ACCGGTGGC GCGTCTGT GTCTCTGG GTGATGAGC CTTTATG GCTTCTCGT ATGCTGATG GTGCTGGTC TCGGCCCA 100
 D Y K D A V A A V A P W G . . A F L W A S P Y A D W S W V C G R
 T T K T R L R L L L L L G G D E P F Y G L L R H L I G R G S A A A
 L Q R R G C G C C C S L G V M S L F H G F S V C . L V V G L R P

IGF-G5 (SEQ ID NOS 2206 (DNA) and 2207-2210 (protein), respectively, in order of appearance)
 GACTACAAG ACTCGTGGT TTGCTTGGT GTGATGATTA GCTTTTCTG TTTAGGGGT CCGTGGGT TTTACTCAG CTTGGCTG CTGTGTGTG GCCATAGT CTCTTGTG GTGTGTG GCGGCCGA 139
 D Y K D W L V C L G V M I S F F C L G G R C G F L L S V G C L V V C P Q C F F G V W C G G R
 T T K T G W F A W V . . L A F S V Q G V G V A F Y S A L A A L L C A H S A S L V C G A A A A
 L Q R L V G L L G C D D Q L F L F R G S V W L F T Q R R W L P C C V P I V L L W C V V R R P

IGF-7 (SEQ ID NOS 2211 (DNA) and 2212-2217 (protein), respectively, in order of appearance)
 GACTACAAG ACCGGATG GGTGTGTG TAGTATGTT TGGGTGGA GGGATGAG ATTGGCTGAT GGGTTTATG GCTTTTGT GCGCTGGT GCGGCCG CA 112
 D Y K D P D W V L Q L I S L G L E G M Q I G . W V L C V F D G A G W G G R
 T T K T R I G C C S . L V W G W R G C R L A D G F Y A F L M A L A G A A A
 L Q R P G L G V V A D Q F G V G G D V D W L M G F M R F . W R W L G R P

FIGURE 19

